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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
Office of Strategic Research

CONTRIBUTION TO NIE 11-3-69:

SOVIET STRATEGIC DEFENSES

PART II

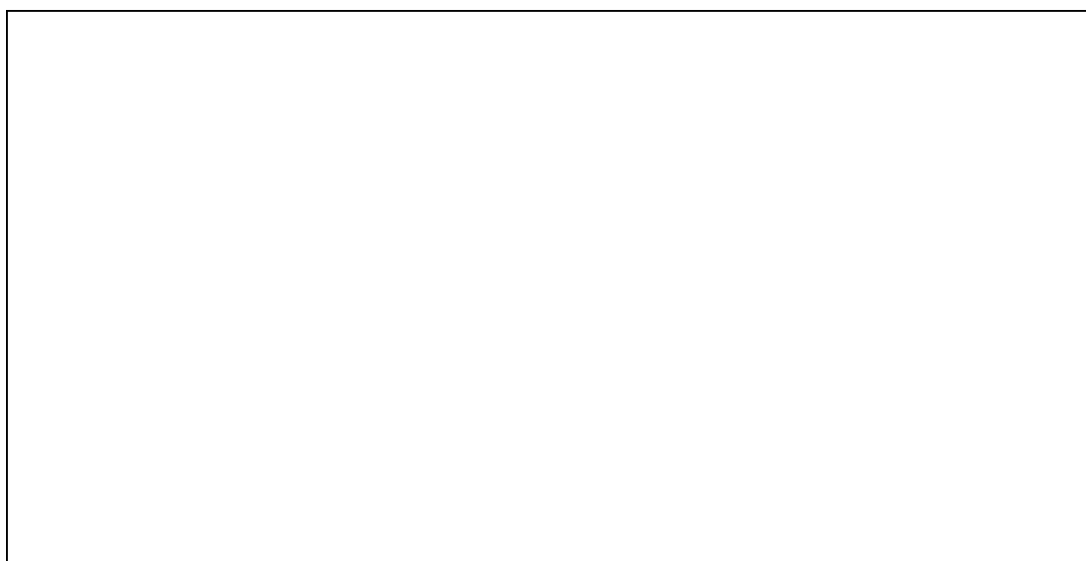
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Contribution to NIE 11-3-69:

Soviet Strategic Defenses

Part II

Summary

Antimissile Defense

Although deployment of the Moscow ABM system is probably nearing completion, the Soviets are continuing to invest heavily in ABM research and development. If development is successful and in the absence of an arms agreement, the Soviets will probably deploy a follow-on area defense system with an IOC in 1976 or later.

The effort to deploy ABM defenses at Moscow has produced an operational force that as of 1 July 1969 totaled 48 launchers at three complexes. An additional complex will probably soon become operational--one of its sites in late 1969 and the other in early 1970--to bring deployment of the present system at Moscow to what is probably its intended maximum of 64 launchers.

The Moscow defenses will probably be expanded in the future by deployment of a significantly improved or follow-on system. Work has continued on support buildings at the two complexes where work on the operations area was suspended in the fall of 1967. In addition, rocket fuel storage at the central ABM support facility considerably exceeds current requirements.

*Note: This completes the formal OSR contribution to NIE 11-3-69. It contains sections on ballistic missile defense, antisatellite defense, and civil defense. Part I contained sections on Soviet policy for strategic defense, air defense, and communications and warning facilities.*

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[REDACTED] A second large acquisition and tracking radar under construction near Chekhov, probably to supplement the coverage of the Dog House, has proceeded slowly. Site preparation and construction of support facilities began more than three years ago but the first footings for the radar itself have only recently been constructed.

In contrast to the uneven progress on the Moscow ABM facilities, the ballistic missile early warning radar system has continued to expand, with three additional Dual Hen House radars started since mid-1967. One is at Skrunda on the Baltic Sea coast, where it will supplement the coverage of the two existing early warning radars in the northwestern USSR. The other two are in the southern USSR, facing China and the possibility of a Polaris threat from the Sea of Okhotsk. All three probably will be operational in 1971.

[REDACTED]

[REDACTED] We believe deployment of ABM launchers is at present limited to the Moscow area.

Development of ABM components continues at the Sary Shagan test center. Construction is in progress on several types of ABM radars and an improved, long-range interceptor missile, probably a modified Galosh, is being tested.

Although some of this work is probably to improve components of the system at Moscow, the major effort is probably directed toward creating a system suitable for more widespread deployment. The Soviets probably would deploy such a system as soon as possible. They have already invested the equivalent of about \$1 billion for the ABM defenses at Moscow and another \$4 billion to \$7 billion for the ABM research and development program at Sary Shagan, and in the past they have pursued large and costly programs for active defense whenever they judged that important portions of a threat could be neutralized.

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Two considerations are fundamental in projecting the deployment of a follow-on Soviet ABM system: the pace of technical progress at the test range, and the resources Soviet leaders are willing to devote to deployment.

If the development effort at Sary Shagan appears promising to the Soviets, a deployment program could be started as early as 1971, well before development would be complete. Such a program probably would not result in an operational capability before 1974 or 1975.

The slow pace of deployment at Moscow, probably due at least in part to highly concurrent development and deployment, may well persuade the Soviets to delay future deployment decisions until adequate testing data are obtained. This could postpone the beginning of deployment of a new system by a year or two beyond the earliest likely date of 1971 and delay IOC until at least 1976.

Were the Soviets to devote resources to this deployment program at rates comparable to those of their most vigorous advanced weapons deployments of the past, they would spend a total of some 5 billion rubles (\$9 billion) to bring all units of the force operational. If the Soviets devote resources at this level to a system based upon components currently being developed at Sary Shagan, they could field some 500 to 700 launchers by 1979. This force would provide ABM coverage for about 25 percent of the population and about 40 percent of the industry, as well as a large portion of the strategic offensive and defensive forces.

The current status of the Soviet debate over military resources suggests that an ABM deployment program begun during the early Seventies would be under heavy pressure from other resource claimants. We therefore judge it unlikely that resources allocated to such a deployment program would exceed 5 billion rubles during the period of this estimate.

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Civil Defense

The importance of a vigorous civil defense program was reaffirmed by Soviet leaders in 1966. Since then, the level of civil defense activity--especially compulsory training--has risen in the Soviet Union. Soviet leaders publicly view the civil defense program as improving the chances of surviving a nuclear war and also as a means for instilling a greater degree of patriotism and discipline in the populace. The basic Soviet concept calls for mass evacuations of urban areas before an attack, but there are many unsolved problems, including uncertain warning time, inadequate transportation, and providing supply and medical services to evacuees.

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I. Trends in Soviet Ballistic Missile Defense Doctrine

Strategic defense has long enjoyed a favored position within the Soviet military establishment. This position may be slipping somewhat, however, now that the technological shortcomings of present ABM hardware, internal military competition for resources, and the prospect of strategic arms limitations talks have raised questions as to the role of ballistic missile defense in Soviet military doctrine. The nature and extent of antiballistic missile deployment appears to have become a major question for Soviet military policy.

The inability of the Soviets, using present technology, to perfect a ballistic missile defense system suitable for widespread deployment may have exacerbated traditional arguments over the role of offensive and defensive forces in modern war. In the past, Soviet proponents of strategic offense have asserted that offensive missile forces can play a defensive role as well by penetrating an enemy's strategic defenses and blunting his offensive strike capability. Current statements stressing the penetration capability of Soviet offensive missiles, such as that by General Staff Chief Zakharov in April 1969, not only argue implicitly for expenditures on strategic forces but, by stressing the shortcomings of ballistic missile defenses, argue indirectly against devoting resources to deploying defensive systems in the USSR.

Technological difficulties encountered in fielding ballistic missile defense systems may hamper efforts of strategic defense advocates to counter these arguments and make a strong claim to a large portion of the resources allocated to the military establishment. A reference to the US proposed ABM system by *Novosti* correspondent G. Gerasimov in March 1969 may also have pointed up Soviet problems. Gerasimov stated that "to be effective in a nuclear attack, defense must be 100 percent...but 100 percent interception is impossible."

The competition for resources has become particularly acute in recent years as Soviet military doctrine has come to resemble more closely what in the West is termed "flexible response." (See SR IM 68-29, *The Sharpening Soviet Military Debate on Forces for the 1970s*, December 1968.)

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This concept implies improved capabilities for the Soviet general purpose forces, which may come at least in part at the expense of the strategic forces. As this concept has become more accepted in Soviet doctrine, strategic force advocates have retreated from arguments that any war between nuclear powers would inevitably escalate into a general nuclear conflict. They now assert that the new conventional options only serve to emphasize the importance of the strategic rocket forces. One military writer argued in December 1968 that overemphasizing the importance of conventional weapons is a "more serious" error than a one-sided reliance on nuclear weapons. He argued that "the new possibilities for waging armed struggle have arisen not in spite of, but because of, nuclear-rocket weapons." Marshal Moskalenko took a similar line in the January 1969 issue of the classified Soviet journal *Military Thought*.

The ABM question was probably one of the main points of contention in the internal debate among the Soviet leadership prior to the decision to enter arms talks. When the Soviet government announced in June 1968 that it would discuss offensive and defensive strategic arms limitations with the United States, Soviet spokesmen ceased referring publicly to a Soviet ABM capability. Nor, with one exception in the classified press, have military writers argued during this time period that an ABM system is needed for the defense of the USSR. This moratorium, which is still in effect, is probably meant in part to lessen the effect of Soviet ABM developments on the formulation of defense policy in the US. At the same time, it serves to tamp down open discussion of what is probably a sensitive internal issue for both Soviet military and political leaders. (See SR IM 69-12, *Soviet Military Resistance to Strategic Arms Talks Increases*, April 1969.)

Defensive weapon systems will probably play an important role in any strategic arms talks with the United States. Even if there is an agreement to limit ABM deployment, the USSR will probably continue research and development of defensive strategic weapons to keep its options open.

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## II. Ballistic Missile Defense

### A. Current Status of Soviet ABM Deployment

For a presentation of the current status of Moscow ABM deployment and development activity at Sary Shagan see [redacted]

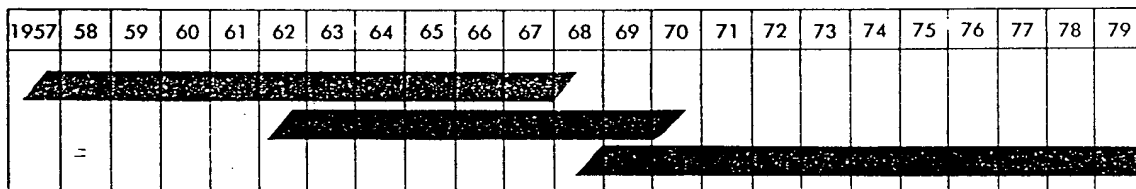
The Soviets almost certainly have not started ABM deployment beyond Moscow. We base this estimate on three factors. First, deployment of the ABM system at Moscow stopped halfway to the original force goal. Second, no candidates for follow-on ABM radars at Sary Shagan appear ready for integration into another deployed system. Third, the search of likely ABM deployment areas on satellite photography has not disclosed evidence of new deployment (see Figure 2, page 9).

Deployment of Dual Hen House early-warning radars has continued, however. There are now five facilities of this type, three begun since mid-1967.

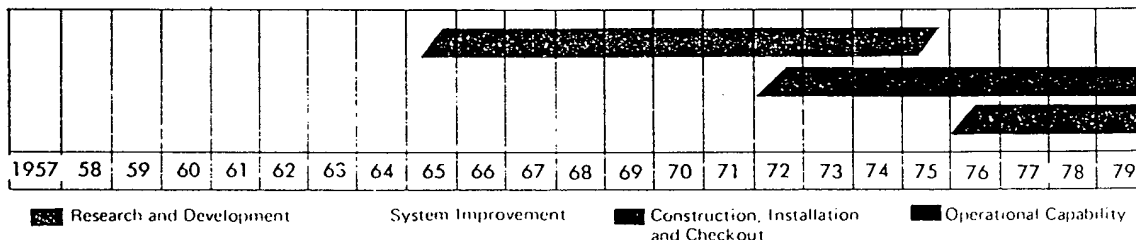
Figure 1

### Timing of Soviet Ballistic Missile Defense Programs

#### MOSCOW ABM



#### FOLLOW-ON LONG RANGE ABM



The ABM system around Moscow began deployment in 1962, and the present force goal of 64 launchers at four complexes -- half the original goal -- will probably be reached early next year. Improvement of the Moscow system is now under way, based on continuing research and development at the Sary Shagan missile test center.

Most of the research and development effort at Sary Shagan is probably directed toward developing a new long-range system, however. If deployment begins in 1972, the first units of the force would probably be operational in 1976.

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Three Dual Hen Houses--one under construction--will provide coverage of the US Polaris and ICBM threats from the north and northwest and two under construction in southern Siberia are oriented toward China and a potential Polaris launch area in the Far East. One of the space-tracking Dual Hen Houses at Mishelevka probably will also provide early warning of ballistic missile attack from China.

Since some ballistic missile threat approaches are not covered by present early warning radars, other radars will probably be deployed. Photography of those areas considered most likely for this deployment has been searched and no further construction has been found (see Figure 2, page 9).

#### B. Future Developments

##### 1. Prospects for Nationwide Deployment

The Soviets have been marking time on ABM deployment while continuing research and development at Sary Shagan. Some of the effort there is apparently being devoted to upgrading components of the Moscow ABM system, but will probably not lead to deployment of the present system beyond Moscow. It is more likely that the existing Moscow complexes will be retrofitted with improvements as they become available. Significant improvement of major components, such as the site radars, might also warrant completion of some of the four unfinished complexes.

Large-scale construction projects and other activities under way at Sary Shagan are almost certainly aimed at a substantial upgrading of present ABM capabilities. The effort already devoted to new construction activity suggests that a new or greatly modified system is under development. Test firings of a probable modified Galosh antimissile missile have been under way for about a year. Large new antennas have been under construction since 1966 on the site of the dismantled developmental version of the Dog House radar, and an incomplete Try Adds has been undergoing extensive modification since 1967. A probable ABM launch area was begun by March 1968 but is still under construction.

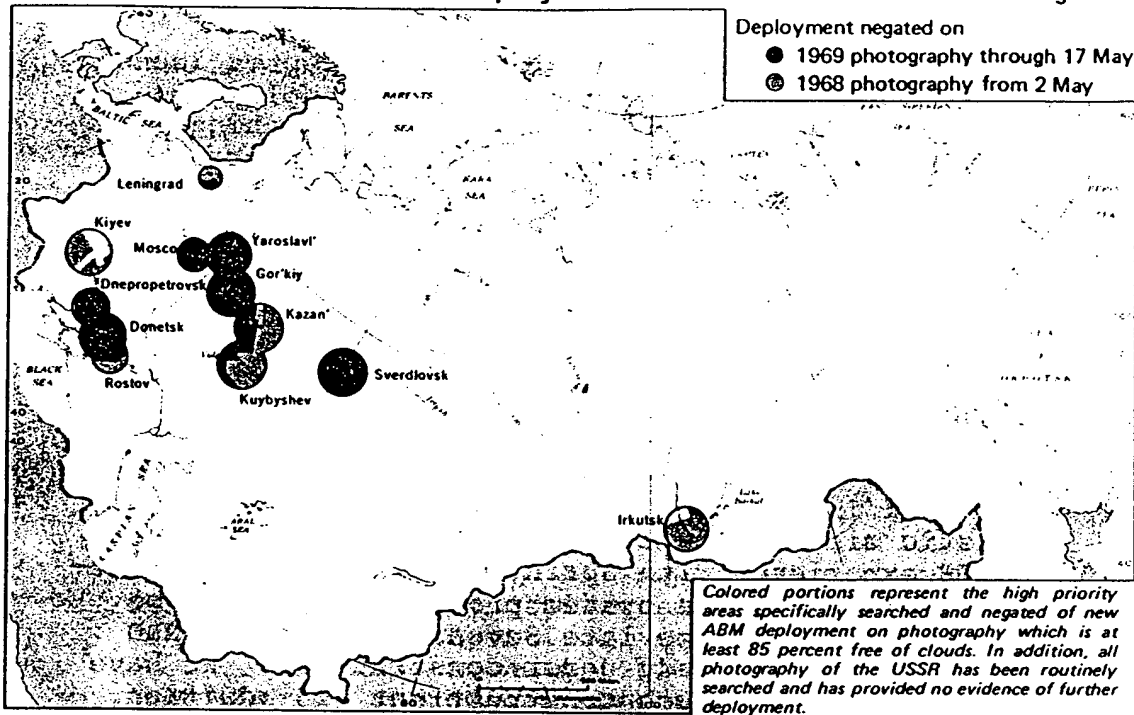
There is no firm basis for estimating the type of missile and radar to be installed and tested at the modified Try Adds site. The similarity of

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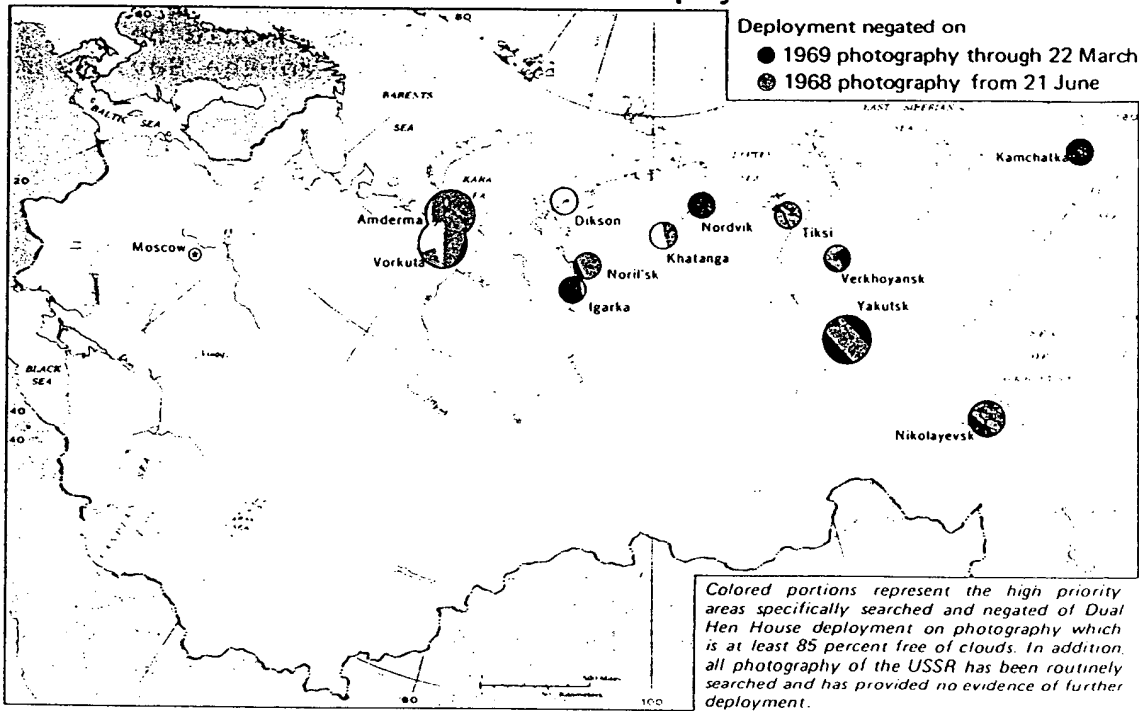
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## Search Areas for Soviet ABM Deployment

Figure 2



## Search Areas for Soviet Dual Hen House Deployment



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spacing between Galosh long-range interceptor launch positions and those at the new launch complex suggests, however, that the Soviets are continuing development of long-range, exoatmospheric intercept systems. Furthermore, the curtailment of the long-range Galosh deployment at Moscow in 1967 followed closely the resumption of activity at the previously dormant Launch Complex D Try Adds facility. These events probably reflect a decision to shift from deployment of the present long-range system at Moscow to development of a follow-on system with a similar role.

It is unlikely that the Soviets will have a terminal intercept system in operation against ballistic missiles in the next ten years. Judging from US experience with Sprint development, a Sprint-like terminal defense system probably could not be operational before the late Seventies, even if R&D facilities were already under construction. We have not identified any such construction. In addition, Soviet solid propellant and computer technology probably lags that of the US, and the development of a Sprint-like missile and its control radar would be an even greater technological challenge to the Soviets than to the US.

## 2. Force Level Projections

We have used past Soviet performance in the deployment of advanced weapon systems to project the likely pace and magnitude of future Soviet weapon programs. An analysis of expenditures for 39 past deployment programs provides us with measures of Soviet willingness to commit resources for specific weapon systems, and we have applied them to projecting Soviet ABM deployment. (See SR IR 68-18, *Projecting Soviet ABM Deployment: An Analytical Framework*, December 1968.)

Were the Soviets to undertake a high priority ABM deployment program to which they committed resources over an eight-year procurement period at a rate comparable with the most vigorous programs of the past, they would expend approximately 5 billion rubles (the equivalent of about \$9 billion). For example,

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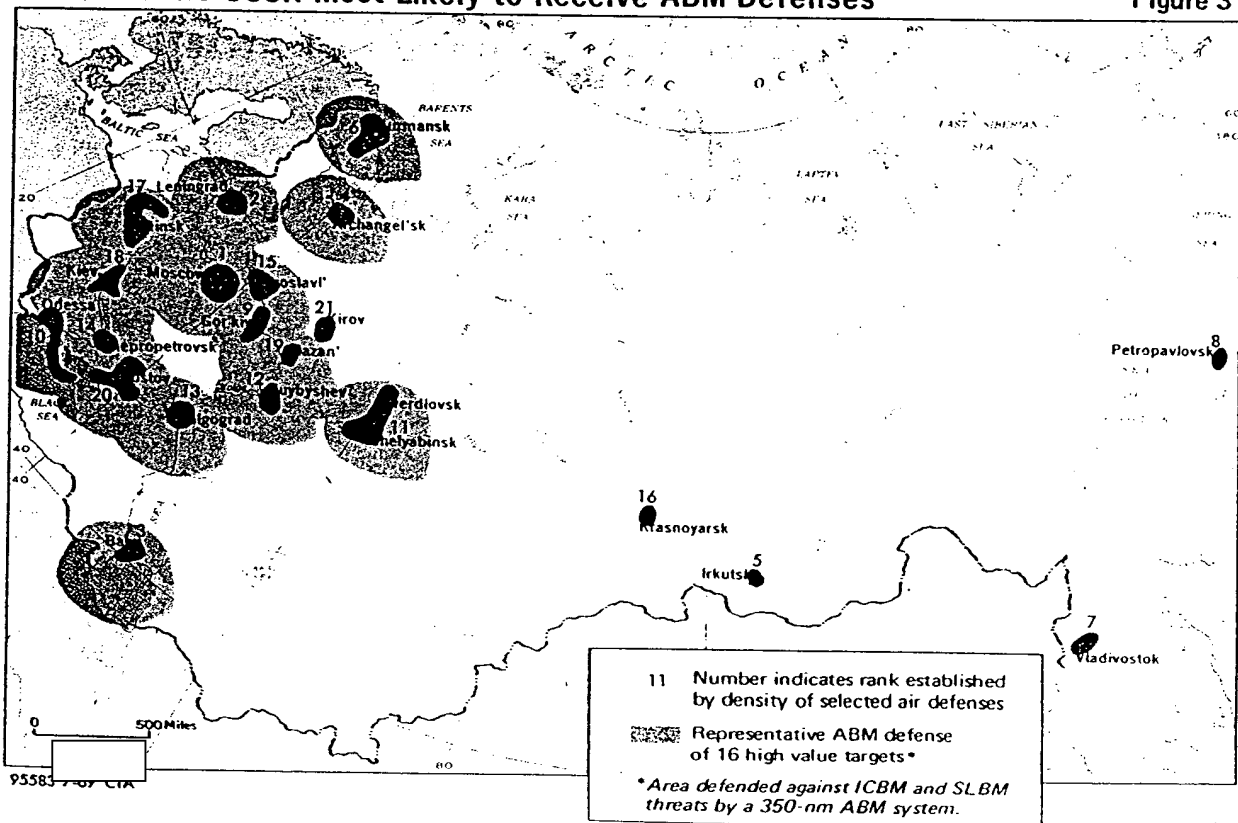
the largest past effort, the SA-2 surface-to-air missile program, cost less than 4 billion rubles during the first eight years of its deployment. A total of about five and one-half billion rubles was spent during its complete procurement period of 11 years.

The most likely ABM system to follow the deployment at Moscow is a long-range area defender. On the basis of the gross technical parameters expected of components observed at Sary Shagan, GMAIC has hypothesized a system whose key features include a long-range, phased-array regional acquisition radar capable of controlling launcher batteries as distant as 200 nm. Each battery has its own engagement and tracking radars and can control up to 50 reloadable launchers.

If the Soviets pursued a deployment program based on such a system and over the first eight years were to allocate resources worth about 5 billion rubles to it, they could probably field some 500 to 700 launchers. Figure 3 (below) shows, for example, coverage for up to 16 of the 21 highest value target areas of the USSR.

Areas of the USSR Most Likely to Receive ABM Defenses

Figure 3



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### 3. Deployment Timing

Deployment of a follow-on ABM system based on the new or modified components under development at Sary Shagan appears unlikely to start before 1971. Even with highly concurrent development and deployment, the first units of such a system probably could not become operational before 1975. Construction and equipment installation are not yet completed on any of the new electronics and launch facilities at Sary Shagan. For example, the Roost House radar is just now externally complete but probably will not transmit signals for several months and more than a year of work will probably be required to complete the modified Try Adds radar and launch positions at Launch Complex D.

The slow pace of deployment experienced at Moscow, probably due at least in part to highly concurrent development and deployment, may well persuade the Soviets to delay future deployment decisions until adequate testing data are obtained on new components. This could postpone initial deployment by a year or two beyond the earliest likely date of 1971 and delay IOC until at least 1976.

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### III. Antisatellite Defense

The Soviets have continued to condemn alleged US efforts to "militarize" outer space. This implied requirement for antisatellite defense has been given substance by the identification of a space-track authority associated with the national air defense headquarters. The mission of PVO Strany (Antiair Defense of the Homeland)--to defend the USSR against air, missile, and space attack--includes defense against satellites. Data on objects in space are probably collected and analyzed by the space-track authority, which could cooperate with other elements of PVO Strany or the Strategic Rocket Forces in conducting satellite intercepts.

#### A. Space Tracking Radars

Eight Dual Hen House radars at Sary Shagan and at Mishelevka near Irkutsk are probably related to Soviet antisatellite defense. When completed, these radars will form a space surveillance net along the southern USSR providing radar coverage [REDACTED] [REDACTED] from near the horizon to the zenith. It will have a good capability to track satellites in near earth orbits.

Construction of a set of four Dual Hen House radars began at each location in 1963-64 [REDACTED]

[REDACTED] Each set consists of two dual radars which cover low angles of elevation (nicknamed Thin Boy) and two which cover high elevation angles (nicknamed Fat Boy). All of these radars are externally complete except for the two Fat Boys at Mishelevka. During 1967 and most of 1968, construction on these radars virtually halted. Construction resumed in November 1968 and the remaining radars probably will be externally complete this year. [REDACTED] [REDACTED] three of the radars--one Thin Boy at each location and a Fat Boy at Sary Shagan. All eight Dual Hen Houses could be operational by 1971.

To supplement data on space objects provided by the southern space surveillance network, the Soviets could also use the ballistic-missile early-warning Dual Hen Houses at Olenegorsk and Skrunda

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#### IV. Soviet Civil Defense

The latest developments in this subject are presented in SR IR 69-5, *Civil Defense in the Soviet Union*, May 1969, the summary of which is presented here.

Soviet political and military leaders at the 23rd Party Congress in 1966 reaffirmed their belief in the importance of a vigorous civil defense program. Since then, there has been a general rise in the level of civil defense activity in the Soviet Union.

In part, the renewed emphasis reflects a conviction that a strong civil defense posture would help the USSR survive a nuclear war, but beyond that it also serves as a means for instilling a greater degree of patriotism and discipline in the populace. The regime's growing concern over the danger of liberal influences has stimulated increased reliance on paramilitary-type programs for large-scale indoctrination.

No other country has informed its people as thoroughly on the effects of nuclear, biological, and chemical weapons. Soviet citizens now are engaged in the sixth compulsory civil defense instruction program since 1955, and civil defense has become a required subject in elementary and secondary schools throughout the country. Workers are also participating in compulsory training. An extensive network of staff schools trains leaders for civil defense duties. The effect of all this indoctrination cannot be measured, but its pervasiveness has probably conditioned most of the populace to follow orders and take self-help measures in an emergency.

The Soviet military has an important role in civil defense. Military officers supervise the program, and in wartime civil defense operations involving millions of civilian workers would come under military control. In addition, the Soviets maintain a number of military civil defense units, and a three-year school was established in March 1967 to train junior officers in civil defense specialties.

The Soviet concept of civil defense calls for mass evacuation of urban areas before an attack, because

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blast-resistant shelter is scarce and is considered too expensive to build on a large scale. This concept presupposes adequate advance warning during a period of rising tension or nonnuclear war. Some key personnel would remain in place, however, to maintain essential services, and Soviet civil defense officials have claimed that some hardened shelters are provided for them.

The evacuees would disperse into the countryside by every means of transport available. Extensive plans have been made to handle the logistics of this operation but the feasibility of an expeditious evacuation remains questionable. Transportation could be a particularly acute problem because of competing military needs and inadequate facilities.

Even if the urban dwellers were successfully evacuated, the problems of providing fallout shelter, food, and medical services for them would remain. Soviet civil defense literature devotes much attention to techniques for building earth-covered trenches, suggesting that the Soviets intend to rely heavily on this kind of last-minute preparation. There is little evidence that materials have been stockpiled in the countryside for shelter construction or for other essential services to the evacuees.

A decision to evacuate cities before an attack would cause enormous disruption and could have an unpredictable psychological effect on the population. Soviet leaders might consider a capability for evacuating cities as a useful option for demonstrating their resolve short of hostile action in a crisis situation. On the other hand, evacuation during a period of rising international tension would have provocative overtones.

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